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(71) 出願人 000219668
東海化成工業株式会社
愛知県小牧市東二丁目323番地
(71) 出願人 000219602
東海ゴム工業株式会社
愛知県小牧市東三丁目1番地
(72) 発明者 古川 直
愛知県小牧市東二丁目323番地 東海化成
工業株式会社内
(74) 代理人 100081776
弁理士 大川 宏

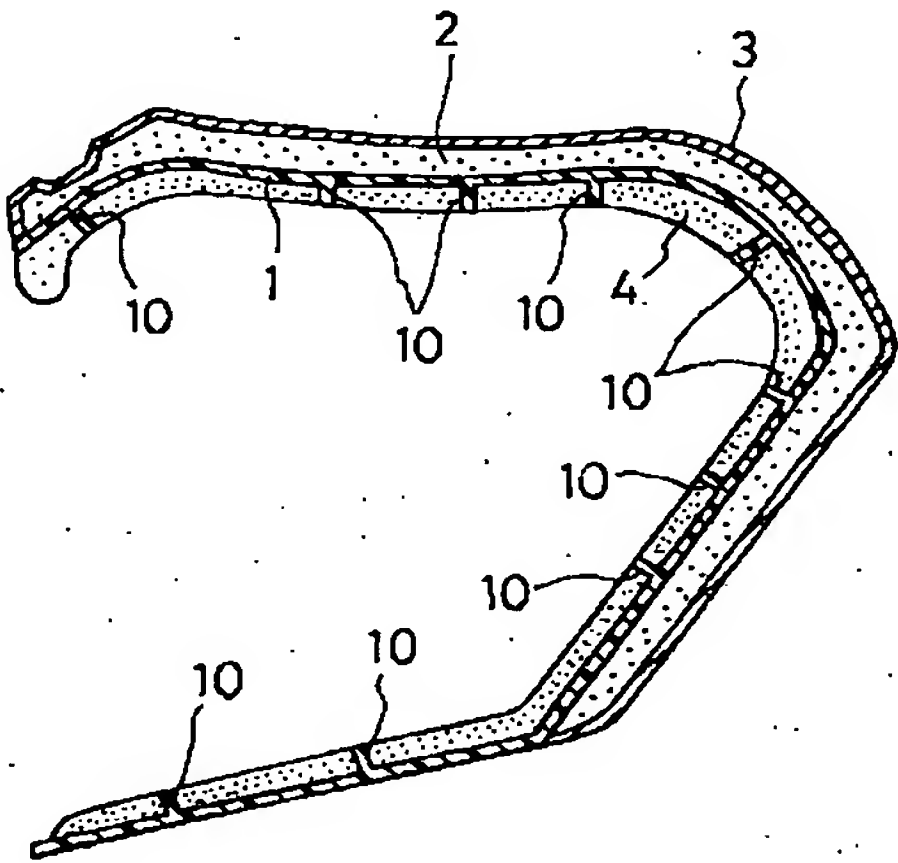
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(54) 【発明の名称】 車両内装品の製造方法

(57) 【要約】

【課題】 予め吸音材層をもつ基材を型内に配置して発泡体層を発泡成形する方法において、寸法精度を向上させる。

【解決手段】 芯材1は吸音材層4を貫通する芯材凸部10を部分的に有し、芯材凸部10の先端が一方の型面50に当接した状態で発泡成形を行う。芯材凸部10が型面50に当接して発泡圧力を受けるので、発泡圧力による芯材1の変形が防止される。



【特許請求の範囲】

【請求項 1】 裏面側に軟質の吸音材層をもち硬質樹脂からなる板状の芯材を成型型の一方の型面に配置するとともに、該成型型の他方の型面に表皮体を配置し、該表皮体と該芯材の間に発泡樹脂を注入して発泡成形することにより該表皮体及び該芯材と接合した発泡体層を形成する車両内装品の製造方法であって、該芯材は該吸音材層を貫通する芯材凸部を部分的に有し、該芯材凸部の先端が一方の該型面に当接した状態で該発泡成形を行うことを特徴とする車両内装品の製造方法。

【請求項 2】 前記芯材凸部は前記芯材表面に形成されたリブであり、前記吸音材層には該リブが貫通するスリットをもつことを特徴とする請求項 1 に記載の車両内装品の製造方法。

【請求項 3】 裏面側に軟質の吸音材層をもち硬質樹脂からなる板状の芯材を成型型の一方の型面に配置するとともに、該成型型の他方の型面に表皮体を配置し、該表皮体と該芯材の間に発泡樹脂を注入して発泡成形することにより該表皮体及び該芯材と接合した発泡体層を形成する車両内装品の製造方法であって、該吸音材層は部分的に硬質部を有し、該硬質部が一方の該型面に当接した状態で該発泡成形を行うことを特徴とする車両内装品の製造方法。

【請求項 4】 前記硬質部は前記吸音材層が部分的に圧縮されて形成された薄肉部であり、一方の前記型面に形成された金型凸部と前記芯材とで該薄肉部を挟持した状態で前記発泡成形を行うことを特徴とする請求項 3 に記載の車両内装品の製造方法。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、インストルメントパネル（以下、インパネという）、ドアトリムなど軟質の発泡体層がサンドイッチ状に積層された構造の車両内装品の製造方法に関し、さらに詳しくは、裏面側に吸音材層をもつ車両内装品の製造方法に関する。

【0002】

【従来の技術】自動車のインパネは、図 5 に示すようにガラス繊維強化樹脂などから形成された硬質で板状の芯材 300 と、ポリ塩化ビニルなどから形成された表皮層 301 と、表皮層 301 と芯材 300 との間に形成されたポリウレタンなどの発泡体層 302 とから構成されている。そして芯材 300 により剛性を付与するとともに、発泡体層 302 及び表皮層 301 により良好な触感と外観を付与している。そして近年では、芯材 300 の裏面側表面にフェルトやスラブウレタンなどの吸音材層 303 を接合し、この吸音材層 303 によりエンジンルームなどからの騒音が車室内に侵入するのを防止することも行われている。

【0003】つまり、このような多孔質で軟質の吸音材層 303 を設けることにより、吸音材層 303 に到達した音

波が散乱するとともに、吸音材層 303 の無数の孔内で音エネルギーが熱エネルギーに変換されることで、音波が減衰あるいは消滅する。

【0004】このようなインパネを製造するには、先ず射出成形や圧縮成形により所定形状の芯材 300 を形成するとともに、真空成形などで所定形状の表皮体を形成する。次に芯材 300 及び表皮体を成型型内に配置し、芯材 300 と表皮体の間に発泡樹脂を注入して発泡成形を行う。発泡樹脂の発泡圧力により表皮体は型面に押圧されて賦形され、表皮層 301 及び芯材 300 と一体的に接合された所定形状の発泡体層 302 が形成される。

【0005】そして成型型から離型後、余分な表皮体をトリミングし、芯材 300 の裏面側にシート状の吸音材層 303 を両面テープや接着剤で接合している。

【0006】

【発明が解決しようとする課題】ところが発泡体層 302 を形成後に吸音材層 303 を接合する方法では、インパネは大型の成形品でありかつ表皮層 301 及び発泡体層 302 の重量が加わるために重く、作業者の負担が大きいという問題がある。またそのため接着位置の位置決め作業は容易とはいえず位置決め精度が安定しないという不具合があり、接合の工数が多大となっていた。さらに接合作業中に表皮層 301 に傷が付く恐れもあり、不良品の発生率も高い。

【0007】そこで吸音材層 303 を予め接合した芯材 300 を用い、表皮体とともに成型型内に配置して発泡成形することで発泡体層 302 を形成する方法が検討された。この方法によれば、吸音材層 303 を接合する工程では表皮層 301 及び発泡体層 302 をもたない芯材 300 を取り扱うので、前述の方法に比べて作業者の負担を軽減することができ、位置決め精度も向上する。また表皮層 301 に傷が付くこともないので、不良率を低減することができる。

【0008】しかしながら上記製造方法で吸音材層付きインパネを製造すると、寸法精度が低いという不具合があることが明らかとなった。すなわち、発泡体層 302 の発泡成形工程において発泡樹脂の発泡圧力が高まると、その圧力で芯材 300 及び吸音材層 303 が型面へ向かって押圧される。すると吸音材層 303 は軟質であるために圧縮変形し、また部分的な肉の移動も生じるため、芯材 300 に変形が生じてしまうのである。

【0009】本発明はこのような事情に鑑みてなされたものであり、予め吸音材層をもつ基材を型内に配置して発泡体層を発泡成形する方法において、寸法精度を向上させることを目的とする。

【0010】

【課題を解決するための手段】上記課題を解決する本発明の車両内装品の製造方法の特徴は、裏面側に軟質の吸音材層をもち硬質樹脂からなる板状の芯材を成型型の一方の型面に配置するとともに、成型型の他方の型面に表

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皮体を配置し、表皮体と芯材の間に発泡樹脂を注入して発泡成形することにより表皮体及び芯材と接合した発泡体層を形成する車両内装品の製造方法であって、芯材は吸音材層を貫通する芯材凸部を部分的に有し、芯材凸部の先端が一方の型面に当接した状態で発泡成形を行うことにある。

【0011】上記製造方法において、芯材凸部は芯材表面に形成されたリブであり、吸音材層にはリブが貫通するスリットをもつことが好ましい。

【0012】また本発明の車両内装品の製造方法のもう一つの特徴は、裏面側に軟質の吸音材層をもち硬質樹脂からなる板状の芯材を成型型の一方の型面に配置するとともに、成型型の他方の型面に表皮体を配置し、表皮体と芯材の間に発泡樹脂を注入して発泡成形することにより表皮体及び芯材と接合した発泡体層を形成する車両内装品の製造方法であって、吸音材層は部分的に硬質部を有し、硬質部が一方の型面に当接した状態で発泡成形を行うことにある。

【0013】上記製造方法において、硬質部は吸音材層が部分的に圧縮されて形成された薄肉部であり、一方の型面に形成された金型凸部と芯材とで薄肉部を挟持した状態で発泡成形を行うことが望ましい。

【0014】

【発明の実施の形態】本発明の一つの製造方法では、芯材の芯材凸部の先端が成型型の型面に当接した状態で、発泡体層が発泡成形される。したがって発泡圧力が芯材に加わると、芯材凸部が型面に向かって押圧された状態で保持されるため、吸音材層には圧縮による変形が生じにくく肉の移動も生じにくい。そして芯材にも変形が生じにくいので、高い寸法精度の車両内装品を確実に製造することができる。

【0015】また本発明のもう一つの製造方法では、吸音材層の硬質部が成型型の型面に当接した状態で、発泡体層が発泡成形される。したがって発泡圧力が芯材を介して吸音材層に加わっても、硬質部は圧縮変形が生じにくくしかも硬質部が型面に押圧された状態で保持されるため吸音材層の肉の移動も生じにくい。これにより芯材にも変形が生じにくくなり、高い寸法精度の車両内装品を確実に製造することができる。

【0016】本発明の製造方法においては、先ず芯材に吸音材層が接合される。芯材の材料としては、PP、PE、ナイロン、ABS、ASあるいはこれらにガラス繊維などの補強材を混合したものなどの硬質樹脂が例示され、射出成形、圧縮成形などにより所定の板状の芯材を形成することができる。また吸音材層としては、各種繊維材料から形成されたフェルト、あるいは発泡PP、発泡PE、発泡ウレタンなどの発泡体を用いることができる。

【0017】芯材に吸音材層を接合するには、接着剤あるいは両面テープにより接合する方法、熱溶着により接

合する方法などが例示される。そして芯材に吸音材層を接合する工程では、芯材は表皮体及び発泡体層をもたないのでその分軽量であり、作業者の負担を軽減することができる。また表皮体の傷付きの恐れもない。

【0018】本発明の一つの製造方法では、芯材は吸音材層を貫通する芯材凸部を部分的に有している。この芯材凸部は、針、突起、リブなど種々の形状とすることができる。例えば芯材凸部を針形状とすれば、吸音材層に芯材凸部を突き刺すことで貫通させることができる。また芯材凸部が突起、リブなどの場合には、芯材凸部の貫通を許容するための孔、スリット、切り欠きなどの貫通部を吸音材層に形成することが望ましい。後者の場合には、芯材凸部と貫通部との係合により芯材と吸音材層の接合時の位置決め精度が向上する。

【0019】また芯材凸部をリブとし、貫通部をスリットとすることが好ましい。このようにすれば、芯材凸部と型面との当接による芯材の変形防止作用を奏しつつ吸音材層の面積全体に対する貫通部の合計面積を小さくすることができ、貫通部による吸音材層の吸音作用の低下を最小限にとどめることができる。また位置決め精度をより高くすることができ、吸音材層の接合作業も容易である。このスリットは、両端が吸音材層内に位置する長孔状であってもよいし、一端が吸音材層の端部に開口する切り欠き状であってもよい。

【0020】そして本発明のもう一つの製造方法では、吸音材層は部分的に硬質部を有している。この硬質部は、吸音材層に部分的に樹脂を含浸したり、部分的に加圧・加熱したりすることにより形成することができる。あるいは硬質部材を吸音材層に部分的に埋設あるいは付着させて形成してもよいが、硬質部の厚さ方向全体が硬質となっていることが望ましい。しかしながら、硬質部をもつ吸音材層を芯材と接合するとき、芯材凸部と貫通部をもつ場合に比べて位置決め精度が低い場合がある。したがって上記した芯材凸部及び貫通部をもつ構成と併用することが望ましい。

【0021】硬質部は吸音材層が部分的に圧縮されて形成された薄肉部とすることが望ましい。このようにすれば、成型型の一方の型面に薄肉部の形状に対応する金型凸部を形成しておくことで、金型凸部と薄肉部との係合によって成型型の型面に配置する際の位置決め精度が向上する。そして発泡成形の際には、金型凸部と薄肉部との係合によって吸音材層が型面に対して移動するのをさらに確実に防止することができ、得られる車両内装品の寸法精度が一層向上する。

【0022】芯材凸部あるいは硬質部の数やピッチは、芯材自身の強度及び発泡圧力に応じて種々設定することができるが、吸音特性の低下を防止する意味から、必要最小限の数にとどめることが望ましく、ピッチはできるだけ広く設定することが望ましい。

【0023】表皮体は、PVCあるいは熱可塑性エラス

トマなどの軟質材料から形成されたシートを真空成形することで所定形状に形成される。あるいは粉体スラッシュ成形によって所定形状の表皮体を製造することもできる。

【0024】次に、吸音材層が接合された芯材が成型型の一方の型面に配置され、成型型の他方の型面には所定形状に形成された表皮体が配置される。そして表皮体と芯材の間に発泡樹脂が注入され、発泡成形によって表皮体及び芯材と一体的に接合した発泡体層が形成される。このとき、芯材凸部又は硬質部の一方又は両方が一方の型面に当接した状態で発泡成形されるので、前述したように芯材及び吸音材層の変形が防止され、寸法精度の高い車両内装品が製造される。

【0025】この発泡体層を形成する発泡樹脂としては、発泡ウレタン、発泡PP、発泡ポリスチレンなどの各種発泡樹脂を用いることができる。その注入方法は、単なる注入法、射出法、粉体配置法など特に制限されず、発泡倍率も目的に応じて種々設定することができる。

【0026】

【実施例】以下、実施例により本発明を具体的に説明する。

【0027】（実施例1）図1に本実施例の製造方法により製造されたインパネの断面図を示す。このインパネは、ガラス繊維強化AS樹脂製の板状の芯材1と、芯材1の表面側に形成された発泡ポリウレタン製の発泡体層2と、発泡体層2の表面に一体的に被覆されたPVC製の表皮体3と、芯材1の裏面のほぼ全面に形成された発泡ポリウレタン製の吸音材層4とから構成されている。芯材1の裏面側には複数のリブ10が形成され、その先端

端面が吸音材層4の表面から表出している。【0028】このインパネを製造するにあたり、先ず図2に示すようにリブ10をもつ芯材1をガラス繊維強化AS樹脂から射出成形によって形成した。一方、図2に示すように複数のスリット40をもつ吸音材4'を発泡ウレタンから発泡成形により形成した。吸音材4'の厚さはリブ10の高さと同一であり、スリット40の大きさはリブ10の寸法とほぼ同一である。

【0029】そして図2に示すようにリブ10をそれぞれ対応するスリット40に挿通し、図示しない両面テープを用いて吸音材4'を芯材1に接合して、芯材1の表面に吸音材層4を形成した。このときリブ10とスリット40の係合によって、容易に精度高く位置決めすることができた。また芯材1には発泡体層や表皮体が形成されていないのでその分軽量であり、表皮体を傷つけるような心配もないため、作業者の負担が軽減され工数を低減することができる。

【0030】一方、PVC製のシート材を所定寸法に裁断し、真空成形によって所定形状に賦形して表皮体3を形成した。

【0031】次に図3に示すように、吸音材層4をもつ芯材1を一对の金型5の一方の型面50に吸音材層4が沿うように配置し、表皮体3を他方の型面51に沿うように配置して一对の金型5を閉じた。このとき吸音材層4のスリット40を貫通して表出する複数のリブ10の先端面が型面50に当接している。

【0032】その状態で芯材1と表皮体3との間に形成されたキャビティ13に、所定量の図示しない発泡ウレタン樹脂を注入し、発泡成形して発泡体層2を形成した。このとき発泡圧力によって芯材1は型面50に近接する方向へ押圧されるが、複数のリブ10がそれぞれ型面50に当接して支えているため、芯材1の変形が防止される。また芯材1の変形が防止されているから吸音材層4は圧縮されることがなく、圧縮による弾性反力が芯材1に作用することもない。

【0033】したがって芯材1は変形することなく、本実施例の製造方法によれば吸音材層付きインパネを高い寸法精度で製造することができる。また吸音材層4のスリット40に表出するリブ10の端面の面積は十分に小さいので、吸音材層4の吸音作用は十分に奏され、エンジンルームからの騒音が車室内に侵入するのをよく防止することができる。

【0034】（実施例2）本実施例では、先ずPP繊維からなるフェルトを用意し、金型内にて加熱加圧して所定形状に賦形して図4に示す吸音材6'を形成した。このとき一部を強く加圧して圧縮し、繊維どうしが固着した凹状の硬質部60を形成した。硬質部60は直径8mmの円形状をなして50mmピッチで複数個形成され、それぞれ他の部分より厚さが薄い薄肉の凹部となっている。そしてこの吸音材6'の凹部と反対側に位置する平坦な表面を、別に射出成形にて形成された平板状の芯材1と両面テープにより接合した。芯材1には発泡体層や表皮体が形成されていないのでその分軽量であり、表皮体を傷つけるような心配もないため、作業者の負担が軽減され工数を低減することができる。

【0035】一方、PVC製のシート材を所定寸法に裁断し、真空成形によって所定形状に賦形して実施例1と同様の表皮体3を形成した。

【0036】次に図4に示すように、吸音材層6をもつ芯材1を一对の金型5の一方の型面50に吸音材層4が沿うように配置し、表皮体3を他方の型面51に沿うように配置して一对の金型5を閉じた。一方の型面50には、硬質部60の凹部形状及びその位置に一致する複数の金型凸部52が形成され、金型凸部52が凹状の硬質部60に係合して、硬質部60を芯材1とともに挟持した状態となっている。したがって金型凸部52と硬質部60との係合によって、吸音材層6をもつ芯材1の配置の位置決めを精度高くかつ容易に行うことができる。

【0037】その状態で芯材1と表皮体3との間に形成されたキャビティ13に、所定量の図示しない発泡ウレ

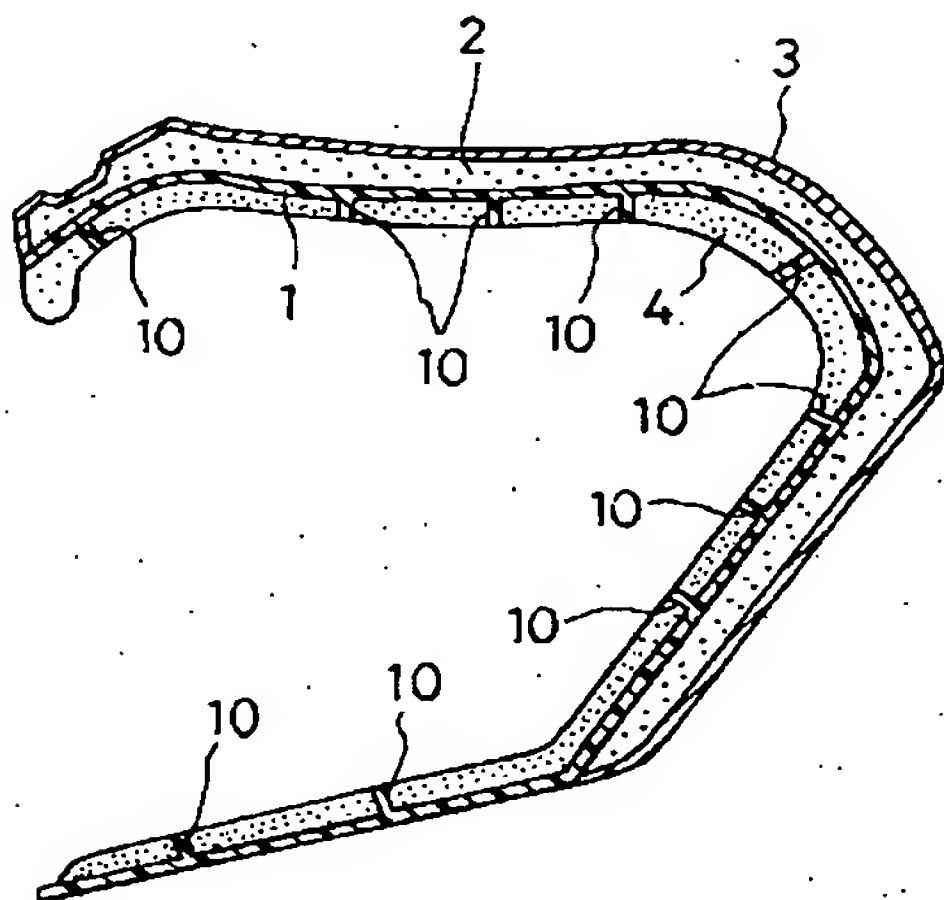
タン樹脂を注入し、発泡成形して発泡体層 2 を形成した。このとき発泡圧力によって芯材 1 及び吸音材層 6 は型面 50 に近接する方向へ押圧されるが、複数の硬質部 60 がそれぞれ金型凸部 52 に当接し、硬質部 60 はほとんど圧縮されないで、芯材 1 の変形が防止される。また芯材 1 の変形が防止されているから、吸音材層 6 の硬質部 60 以外の部分は圧縮されることがなく、圧縮による弾性反力が芯材 1 に作用することもない。

【0038】したがって芯材 1 は変形することなく、本実施例の製造方法によれば吸音材層付きインパネを高い寸法精度で製造することができる。また吸音材層 6 の硬質部 60 の面積は十分に小さいので、吸音材層 6 の吸音作用は十分に奏され、エンジンルームからの騒音が車室内に侵入するのをよく防止することができる。

【0039】なお、実施例 1 と実施例 2 を組合せ、スリット 40 をもつ吸音材層 4 にさらに硬質部 60 を形成し、リブ 10 をスリット 40 に挿通するとともに、硬質部 60 に金型凸部 52 を係合させることも好ましい。このようにすれば、吸音材層 4 と芯材 1 とを接合する際の位置決め精度が向上するとともに、吸音材層 4 をもつ芯材 1 を金型 5 の一方の型面 50 に配置する際の位置決め精度も向上する。したがって一層寸法精度が高いインパネを製造することができる。

*

【図 1】



* 【0040】

【発明の効果】すなわち本発明の製造方法によれば、きわめて高い寸法精度をもつ車両内装品を容易にかつ確実に製造することができ、製造に要する工数も低減することができる。

【図面の簡単な説明】

【図 1】本発明の一実施例で製造されたインパネの断面図である。

【図 2】本発明の一実施例における芯材と吸音材を接合する前の状態で示す斜視図である。

【図 3】本発明の一実施例において発泡体層を発泡成形する直前の金型内の構成を示す要部断面図である。

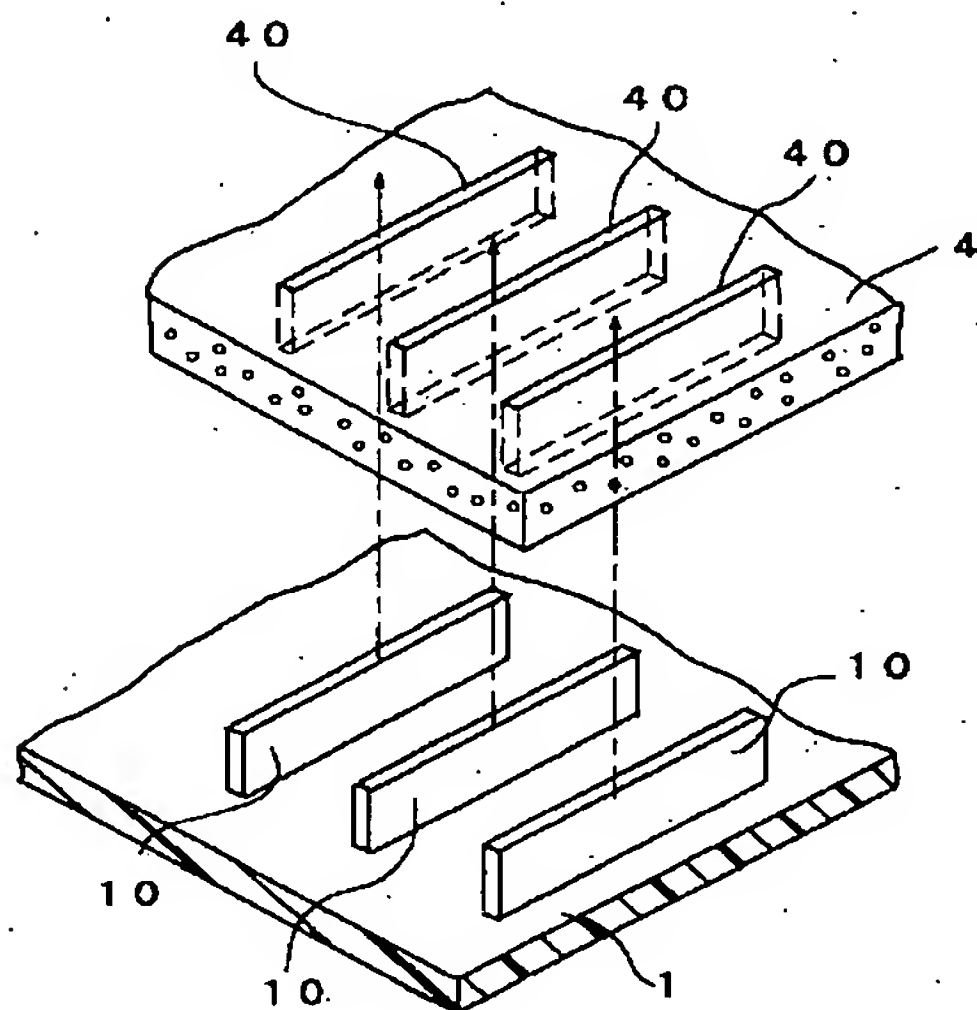
【図 4】本発明の第 2 の実施例において発泡体層を発泡成形する直前の金型内の構成を示す要部断面図である。

【図 5】従来の製造方法で製造されたインパネの断面図である。

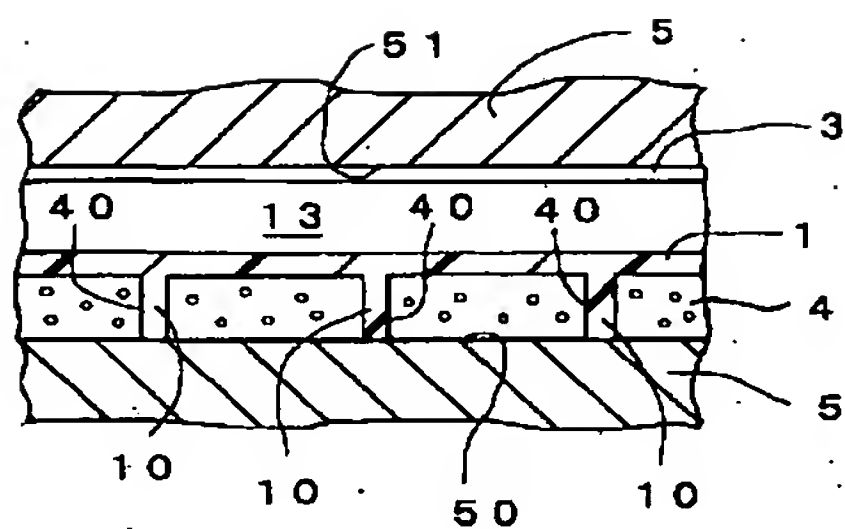
【符号の説明】

1 : 芯材	2 : 発泡体層	3 : 表皮体
4 : 吸音材層	5 : 金型	10 : リブ
(芯材凸部)		
40 : スリット	60 : 硬質部	52 : 金型凸部

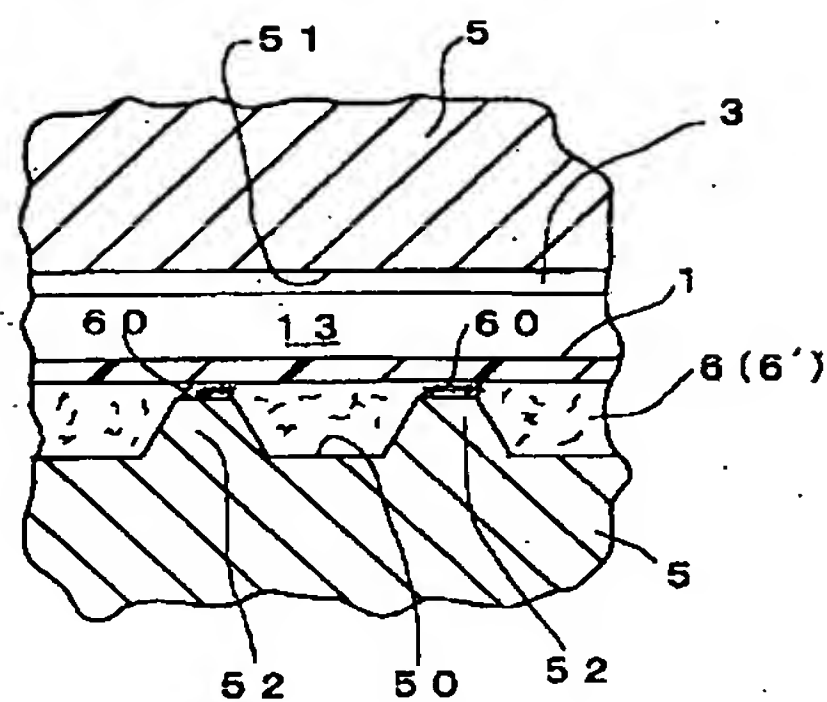
【図 2】



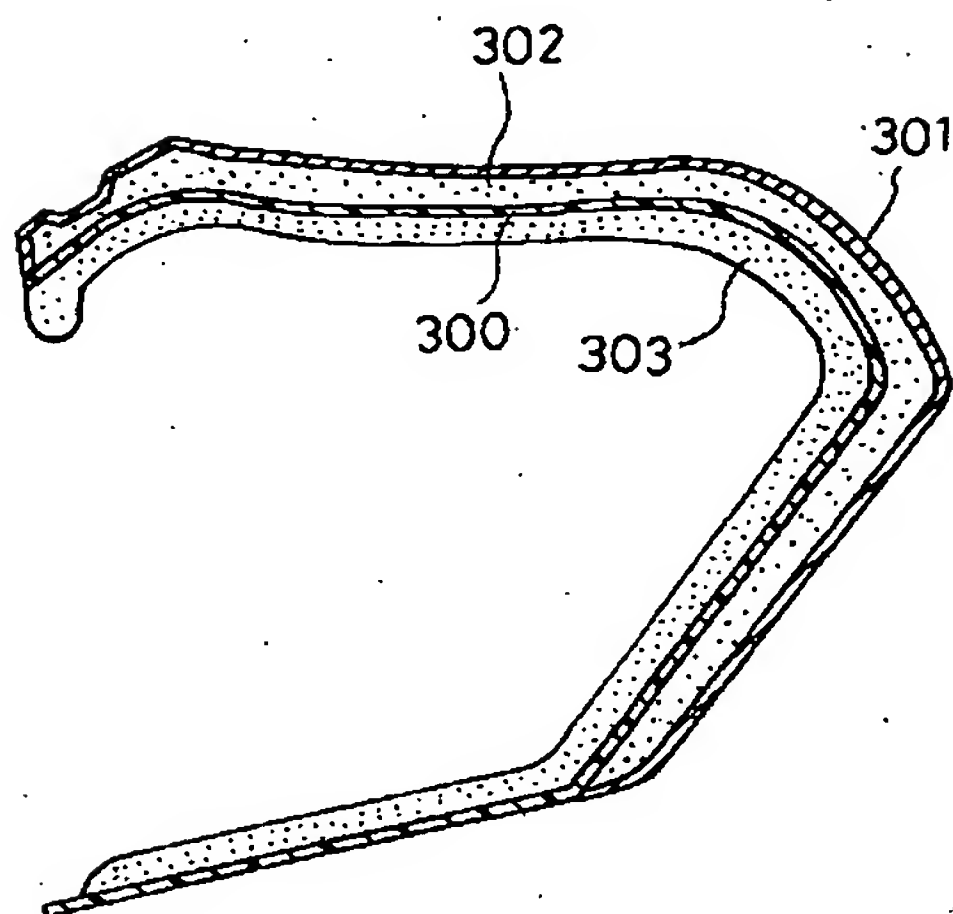
【図 3】



【図 4】



【図 5】



フロントページの続き

(72)発明者 濱田 真彰
愛知県小牧市東三丁目 1 番地 東海ゴム工
業株式会社内

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TOKAI RUBBER IND LTD

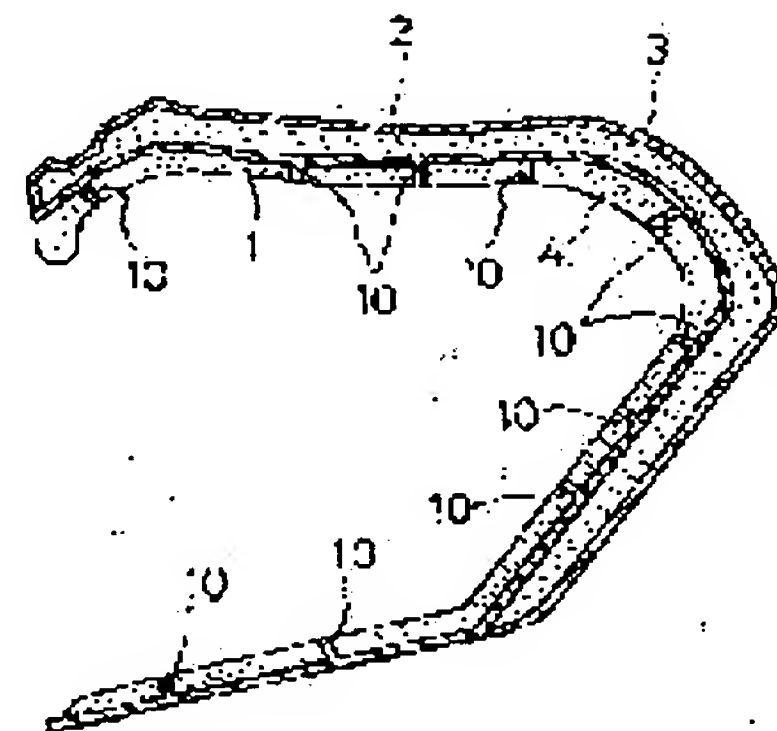
(22)Date of filing : 17.03.2000 (72)Inventor : FURUKAWA SUNAO
HAMADA MASAOKI

(54) METHOD FOR MANUFACTURING VEHICLE TRIM MATERIAL

(57)Abstract:

PROBLEM TO BE SOLVED: To enhance dimensional accuracy in a method wherein a base material having a sound absorbing material layer is preliminarily arranged in a mold to form a foamed layer by foam molding.

SOLUTION: A core material 1 is partially provided with core material projected parts 10 piercing the sound absorbing material layer 4 and foam molding is performed in such a state that the leading ends of the core material projected parts 10 are brought into contact with one molding surface 50. Since the core material receives foaming pressure in such a state that the core material projected parts 10 are brought into contact with one molding surface 50, the deformation of the core material 1 caused by foaming pressure is prevented.



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CLAIMS

[Claim(s)]

[Claim 1] It is car interior equipment which consists of an epidermis layer by which the laminating was carried out to the front face of the foam layer by which the laminating was carried out to the porous acoustic-material layer and the front face of this core material by the elasticity by which the laminating was carried out to the rear face of the tabular core material which consists of rigid resin, and this core material, and this foam layer. This core material is car interior equipment characterized by having had at least one through tube which penetrates a front flesh side, for this a part of acoustic-material layer having inserted in this through tube, having entered in this foam layer, and having combined with this foam layer in one.

[Claim 2] While arranging a porous tabular absorption-of-sound member by elasticity at the rear face of a core material with at least one through tube which penetrates a front flesh side with tabular [which consists of rigid resin] and arranging to one mold face of a die in the condition of having inserted this a part of absorption-of-sound member in this through tube, and having made it projecting to the front-face side of this core material The manufacture approach of the car interior equipment characterized by forming the foam layer joined to this a part of absorption-of-sound member that arranges an epidermis object to the mold face of another side of this die, and joins to this epidermis object and this core material by pouring in and carrying out foaming of the foaming resin between this epidermis object and this core material, and projects from this through tube.

[Claim 3] Said through tube is the manufacture approach of the car interior equipment according to claim 2 characterized by making the taper configuration which a path expands toward the rear-face side of said core material.

[Claim 4] Said core material is the manufacture approach of the car interior equipment according to claim 3 characterized by being fabricated using the metal mold which has a metal mold mating face in the front-face side of said core material

[Claim 5] Said absorption-of-sound member is the manufacture approach of the car interior equipment according to claim 2 to 4 characterized by having heights in the part which counters said through tube, and making these heights insert in said

through tube.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the car interior equipment of the structure where the laminating of the elastic foam layers, such as an instrument panel (henceforth an instrument panel) and a door trim, was carried out to the shape of sandwiches, the car interior equipment which has an acoustic-material layer in a rear-face side in more detail about the manufacture approach, and its manufacture approach.

[0002]

[Description of the Prior Art] The instrument panel of an automobile is the hard and tabular core material formed from glass fiber strengthening resin etc. as shown in drawing 8 . 300 and epidermis layer formed from the polyvinyl chloride etc. 301 and epidermis layer 301 and core material Foam layers, such as polyurethane formed among 300 It consists of 302. And core material It is a foam layer while 300 gives rigidity. 302 and epidermis layer 301 has given good tactile feeling and a good appearance. And at recent years, it is a core material. They are acoustic-material layers, such as felt and slab urethane, to the rear-face side front face of 300. 303 is joined and it is this acoustic-material layer. Preventing that the noise from an engine room etc. trespasses upon the vehicle interior of a room by 303 is also performed.

[0003] That is, acoustic-material layer elastic by such porosity By preparing 303, it is an acoustic-material layer. While the acoustic waves which reached 303 are scattered about, it is an acoustic-material layer. An acoustic wave declines or disappears by a sound energy being transformed into heat energy within the hole of the infinite number of 303.

[0004] In order to manufacture such an instrument panel, it is the core material of a predetermined configuration by injection molding or compression molding first. While forming 300, the epidermis object of the shape of a sheet by which size enlargement was carried out to the predetermined configuration with the vacuum forming etc. is formed. Next, core material 300 and an epidermis object are arranged in a die, and it is a core material. Foaming resin is poured in between 300 and an epidermis object, and foaming is performed. An epidermis object is pressed by the mold face

according to the blowing pressure force of foaming resin, size enlargement is carried out, and it is an epidermis layer. 301 and core material Foam layer of the predetermined configuration joined to 300 in one 302 is formed.

[0005] And an excessive epidermis object is trimmed after mold release from a die, and it is a core material. It is a sheet-like acoustic-material layer to the rear-face side of 300. 303 is joined with a double-sided tape, adhesives, etc.

[0006] However, foam layer After forming 302, it is an acoustic-material layer. With the approach of joining 303, instrument panels are large-sized mold goods, and are an epidermis layer. 301 and foam layer Since the weight of 302 is added, it is heavy, and there is a problem that an operator's burden is large. Moreover, for the reason, it could not say that positioning of an adhesion location was easy, but it had the fault that positioning accuracy was not stabilized, and was great. [of the man day of junction] Furthermore, it is an epidermis layer during a junction activity. There is also a possibility that a blemish may be attached to 301 and the incidence rate of a defective is also high.

[0007] Then, the manufacture approach the foaming raw material was [the approach] made to carry out foaming hardening by the acoustic-material side through the bore is indicated by carrying out foaming to JP,8-244047,A in the condition of having arranged acoustic material and a core material with two or more bores to the mold face which is one side in piles, and having arranged epidermis material to the mold face of another side. According to this manufacture approach, since acoustic material is joinable at the time of foaming, the junction process of acoustic material becomes unnecessary and a man day can be reduced.

[0008]

[Problem(s) to be Solved by the Invention] However, by the manufacture approach given in JP,8-244047,A, it is lightweight, its holdout is also low while the positioning accuracy of acoustic material at the time of arranging acoustic material to a mold face is low, since it has elasticity, and it has the fault that an operator's burden is large. Therefore, although how to prepare the pin which haunts metal mold and stop acoustic material at the pin etc. is indicated by this official report, now, there is a problem that metal mold costs become great in it. Moreover, by the above-mentioned manufacture approach, three kinds, a core material, acoustic material, and epidermis material, must be arranged in metal mold, and while a man day is great, since the tooth space in which each is laid is needed, there is also a problem that large workspace is needed.

[0009] Then, how to form a foam layer by arranging and carrying out foaming of the acoustic-material layer into a die with an epidermis object using the core material joined beforehand was also examined. Since the core material which does not have an epidermis layer and a foam layer at the process which joins an acoustic-material layer is dealt with according to this approach, an operator's burden can be mitigated compared with the above-mentioned approach, and positioning accuracy also improves. Moreover, since a blemish is not attached to an epidermis layer, a percent

defective can be reduced. Furthermore, it becomes advantageous also from an installation tooth-space side.

[0010] In order to join a core material and an acoustic-material layer beforehand, the approach using a double-sided tape, adhesives, or a binder can be considered. However, when a double-sided tape is used, a man day and costs are needed for the exfoliation process of a release paper, or its abandonment processing. Moreover, when a double-sided tape is made to adhere to an acoustic-material layer side, an acoustic-material layer may be damaged in the exfoliation process of a release paper. Furthermore, although the release agent has usually adhered to the fabricated core material front face, when using a double-sided tape and adhesives, a release agent must be removed, an adhesive property must be raised, and there is fault that the man day of the part increases.

[0011] This invention is made in view of such a situation, and it aims at enabling it to unify a core material and an absorption-of-sound member certainly beforehand, without using a double-sided tape, adhesives, etc. Moreover, another purpose of this invention is to enable it to hold an absorption-of-sound member firmly to a core material while it can hold an absorption-of-sound member to a core material certainly within metal mold, without using a double-sided tape, adhesives, etc. and can be made to carry out foaming using cheap metal mold.

[0012]

[Means for Solving the Problem] The description of the car interior equipment of this invention which solves the above-mentioned technical problem It is car interior equipment which consists of an epidermis layer by which the laminating was carried out to the front face of the foam layer by which the laminating was carried out to the porous acoustic-material layer and the front face of a core material by the elasticity by which the laminating was carried out to the rear face of the tabular core material which consists of rigid resin, and a core material, and a foam layer. It is in the core material having had at least one through tube which penetrates a front flesh side, and a part of acoustic-material layer having inserted in the through tube, having entered in the foam layer, and having combined with the foam layer in one.

[0013] And the description of the manufacture approach of this invention that the above-mentioned car interior equipment can be manufactured While arranging a porous tabular absorption-of-sound member by elasticity at the rear face of a core material with at least one through tube which penetrates a front flesh side with tabular [which consists of rigid resin] and arranging to one mold face of a die in the condition of having inserted a part of absorption-of-sound member in the through tube, and having made it projecting to the front-face side of a core material It is in forming the foam layer joined to a part of absorption-of-sound member which arranges an epidermis object to the mold face of another side of a die, and joins to an epidermis object and a core material by pouring in and carrying out foaming of the foaming resin between an epidermis object and a core material, and projects from a through tube.

[0014]

[Embodiment of the Invention] In the car interior equipment of this invention, the core material had at least one through tube which penetrates a front flesh side, and a part of acoustic-material layer inserted in the through tube, it entered in the foam layer, and has combined it with the foam layer in one. Therefore, a double-sided tape etc. is made unnecessary, and an acoustic-material layer can be firmly held to a core material, and suppose that it is more nearly lightweight. Moreover, since the exfoliation process of a release paper becomes unnecessary, damage on an acoustic-material layer is prevented and the degree of freedom of the quality of the material of an acoustic-material layer improves, it becomes possible to use the acoustic-material layer which was more excellent in sound absorption characteristics.

[0015] And by the manufacture approach of the car interior equipment of this invention, it arranges to one mold face of a die in the condition of having inserted a part of absorption-of-sound member in the through tube, and having made it projecting to the front-face side of a core material first. There are two kinds, the approach a part of absorption-of-sound member forms beforehand the core material inserted in the through tube, and the approach of unifying an absorption-of-sound member and a core material within metal mold, in this process, and you may carry out by whichever.

[0016] By the approach of unifying an absorption-of-sound member and a core material beforehand, if an absorption-of-sound member is arranged at the rear face of a core material and an absorption-of-sound member front face is pressed toward a through tube in the location of a through tube, a part of absorption-of-sound member will insert in a through tube. And since a part of absorption-of-sound member projected from the through tube expands with own elasticity and it spreads more greatly than the path of a through tube, it stops being able to escape from a through tube easily. Therefore, the core material to which the laminating of the absorption-of-sound member was carried out can be dealt with as a laminate of one and the activity arranged to one mold face in foaming becomes very easy. Since working hours can be shortened by this, the cycle time becomes short and productivity improves. Moreover, since what is necessary is just to lay the laminate of a core material and an absorption-of-sound member, the workspace which foaming takes can be saved.

[0017] In this case, as for the through tube of a core material, it is desirable to make the taper configuration which a path expands toward a front-face side from the rear face of a core material. This becomes easy to insert a part of absorption-of-sound member in a through tube, and the unification with a core material becomes still easier. In order to make a through tube into such a taper configuration, it is also possible to carry out by post processing. However, if a core material is fabricated using the metal mold which has a metal mold mating face in the front-face side of a core material, since it can consider as a taper configuration using the draft, the

through tube of a taper configuration can be formed in formation and coincidence of a core material, and a man day can be reduced further. Moreover, since a taper configuration, then the periphery section of the through tube in the front face of a core material serve as an edge configuration at the time of shaping, some omissions of the absorption-of-sound member which the engagement by connection produced and was projected from the through tube can be prevented further.

[0018] Moreover, it is also desirable to form heights in the part which counters the through tube of an absorption-of-sound member. While insertion to a through tube becomes still easier by this, the positioning accuracy at the time of the laminating of an absorption-of-sound member and a core material also improves. And if the head of path size is formed in heights from the through tube, since it will expand if a head passes a through tube in the condition of having been compressed and projects from a through tube and will be restored to the original configuration, an omission can be prevented much more certainly.

[0019] Moreover, what is necessary is to counter one mold face of metal mold at a through tube, to form the metal mold heights of the small configuration of the diameter of a round from the path of a through tube, and just to press toward a mold face by the approach of unifying an absorption-of-sound member and a core material within metal mold, where a core material and an absorption-of-sound member are piled up. Then, since a part of absorption-of-sound member is pressed by metal mold heights, it is inserted in a through tube and projects from a through tube, an absorption-of-sound member can be arranged to one mold face in the condition of having held in one to the core material. Moreover, the positioning accuracy at the time of arranging to a mold face also improves.

[0020] And the foam layer joined to a part of absorption-of-sound member which joins to an epidermis object and a core material, and projects from a through tube is formed by arranging an epidermis object to the mold face of another side of a die, and pouring in and carrying out foaming of the foaming resin between an epidermis object and a core material.

[0021] In addition, it is also desirable to make the through tube part of the laminate of the above-mentioned core material and an absorption-of-sound member engage with metal mold heights, and to arrange to a mold face. If it does in this way, the positioning accuracy at the time of arranging to a mold face will improve, and it will also become omission prevention of an absorption-of-sound member. Moreover, since an absorption-of-sound member is compressed with metal mold heights and a laminate (core material) and maintenance immobilization is carried out, even if a blowing pressure acts, deformation of a core material can be prevented. Therefore, the dimensional accuracy of the car interior equipment obtained improves.

Furthermore, metal mold heights can be made into a cross-section abbreviation trapezoid configuration, and can prevent more effectively a configuration with the path of a through tube larger than the surface, and the larger lower side than the path of a through tube, then bending deformation of a core material.

[0022] Moreover, it is also desirable to form partially the core material heights which penetrate an absorption-of-sound member to a core material, and to form the penetration section which permits passage of core material heights in an absorption-of-sound member. If it does in this way, after the tip of core material heights has contacted the mold face of a die, foaming of the foam layer will be carried out. Therefore, since it is held where core material heights are pressed toward a mold face even if the blowing pressure force joins a core material, in an absorption-of-sound member, it is hard to produce migration of meat that it is hard to produce deformation by compression. And since it is hard to produce deformation also in a core material, the car interior equipment of close dimensional accuracy can be manufactured.

[0023] The hard section is formed in a part of absorption-of-sound member, and it is also desirable to constitute so that foaming of the foam layer may be carried out, after the hard section has contacted the mold face of a die. If it does in this way, even if the blowing pressure force joins an absorption-of-sound member through a core material, since the hard section is moreover held that it is hard to produce a compression set after having been pressed by the mold face, the hard section cannot produce migration of the meat of an absorption-of-sound member easily, either. This stops being able to produce deformation also in a core material easily, and the car interior equipment of close dimensional accuracy can be manufactured.

[0024] As an ingredient of a core material, rigid resin, such as what mixed reinforcing materials, such as a glass fiber, to PP, PE, nylon, ABS and AS, or these, is illustrated, and the tabular core material of a predetermined configuration can be formed with injection molding, compression molding, etc. And the magnitude, number, or pitch of a through tube can be variously set up according to own reinforcement of a core material, thickness, reinforcement of an absorption-of-sound member, etc.

[0025] Moreover, as an absorption-of-sound member, foam, such as felt formed from various textile materials or Foaming PP, Foaming PE, and urethane foam, can be used.

[0026] An epidermis object can form in a predetermined configuration the web material formed from elasticity ingredients, such as PVC or thermoplastic elastomer, by carrying out a vacuum forming. Or the epidermis object of a predetermined configuration can also be manufactured by fine-particles slush molding.

[0027] As foaming resin which furthermore forms a foam layer, various foaming resin, such as urethane foam, Foaming PP, and form polystyrene, can be used. The mere pouring-in method, a radiation method, the fine-particles arranging method, etc. are not restricted, but especially the impregnation approach can also set up expansion ratio variously according to the purpose.

[0028]

[Example] Hereafter, an example explains this invention concretely.

[0029] (Example 1) The sectional view of the instrument panel manufactured by drawing 1 by the manufacture approach of this example is shown. This instrument

panel consists of the tabular core material 1 made of a glass fiber strengthening AS resin, a foam layer 2 made from foaming polyurethane formed in the front face of a core material 1, an epidermis layer 3 made from PVC covered by the front face of the foam layer 2 in one, and an acoustic-material layer 4 made from foaming polyurethane of the rear face of a core material 1 mostly formed in the whole surface. Two or more through tubes 10 were formed in the core material 1, a part of acoustic-material layer 4 inserted in the through tube 10, and the point projected from the through tube 10, and has entered in the foam layer 2. And the point which entered in the foam layer 2 spread more greatly than the path of a through tube 10, and foaming resin has sunk in and hardened it into the part. Thereby, it is combined in [a core material 1 and the acoustic-material layer 4] one.

[0030] In manufacturing this instrument panel, the core material 1 which has a through tube 10 as first shown in drawing 2 was formed with injection molding from the glass fiber strengthening AS resin. At this time, it is an ejector half. 100 and cover half 101 is used and it is an ejector half. Two or more 100 convex surfaces The through tube 10 was formed by 102, respectively. Convex surface While 102 has the draft, respectively and a through tube 10 serves as a taper configuration by this, respectively, it is a metal mold mating face. The periphery section of the through tube 10 located in 103 serves as an edge configuration.

[0031] Next, as shown in drawing 3 , absorption-of-sound member 4' of the shape of a sheet made from foaming polyurethane was prepared, and it judged in the predetermined configuration, and has arranged at the rear face of a core material 1. At this time, the through tube 10 is arranged so that the major-diameter side of a taper configuration may counter absorption-of-sound member 4'. And inserted a part of absorption-of-sound member 4' in the through tube 10 from the rear face of a core material 1 in the location of two or more through tubes 10, the through tube 10 was made to penetrate using a rod-like fixture, and it was made to project from a front face. A part of absorption-of-sound member 4' projected from the front face expanded according to own elastic force, and breadth and the bigger head 40 than the path of a through tube 10 were formed. Moreover, since the periphery section of the through tube 10 in the front face of a core material 1 has become edge-like, it engages with a head 40, and it is prevented still more effectively [that a head 40 falls out from a through tube 10]. The laminate with which the laminating of the acoustic-material layer 4 was carried out to the core material 1 in one by this, having used the double-sided tape etc. as unnecessary was obtained.

[0032] Since the foam layer and the epidermis layer are not formed in the core material 1 yet at the above-mentioned process, it is the part light weight and there is also no fear of damaging epidermis. And since a core material 1 and the acoustic-material layer 4 can be dealt with as a laminate of one, an operator's burden is mitigated. Moreover, since junction means, such as a double-sided tape, become unnecessary, a man day can be reduced while being able to reduce ingredient costs.

[0033] On the other hand, the web material made from PVC was judged in the

predetermined dimension, with the vacuum forming, size enlargement was carried out to the predetermined configuration, and epidermis object 3' was formed.

[0034] Next, as shown in drawing 4, the above-mentioned laminate which consists of a core material 1 and an acoustic-material layer 4 has been arranged so that the acoustic-material layer 4 may meet one mold face 50 of the metal mold 5 of a pair, epidermis object 3' has been arranged so that the mold face 51 of another side may be met, and the metal mold 5 of a pair was closed.

[0035] Foaming of the foaming urethane resin of the specified quantity was poured in and carried out to the cavity formed between a core material 1 and epidermis object 3' in the condition, and the foam layer 2 was formed. In order that foaming urethane resin may sink into the head 40 projected from the through tube 10 and may harden the foam layer 2 while joining to a core material 1 and epidermis object 3' in one, a head 40 hardens it in the condition of having combined with the foam layer 2.

[0036] That is, in the obtained instrument panel, a core material 1 and the epidermis layer 3 are joined by the foam layer 2 in one, respectively, and it is prevented by the head 40 which combined with the foam layer 2 in one, and was hardened that the acoustic-material layer 4 falls out from a core material 1. Therefore, according to the manufacture approach of this example, an instrument panel with the acoustic-material layer 4 firmly unified considering the double-sided tape etc. as unnecessary can be manufactured, and lightweight-izing and big reduction of a man day can be aimed at. Moreover, since there should just be a tooth space in which the laminate of a core material 1 and absorption-of-sound member 4' and epidermis object 3' are laid, the tooth space of the workspace in foaming can be saved.

[0037] (Example 2) At this example, it is the same as that of an example 1 except having used absorption-of-sound member 4' formed in the configuration which has two or more projections 41 beforehand as shown in drawing 5.

[0038] In this example, it replaces with inserting absorption-of-sound member 4' in a through tube 10, and projection 41 is inserted in a through tube 10. Projection 41 consists of a head 42 of the major diameter formed at the tip, and a neck 43 of the minor diameter which follows the lower part of a head 42, the path of a head 42 is larger than the path of a through tube 10, and its neck 43 is equivalent to the configuration of a through tube 10. Therefore, in inserting in a through tube 10, if a head 42 passes a through tube 10 and projects from a through tube 10 while the diameter is reduced, it will expand, and it restores it to the original configuration.

[0039] Therefore, since it is prevented that absorption-of-sound member 4' by which the laminating was carried out to the core material 1 drops out of a core material 1 by the head 42, an operator's burden is mitigated like an example 1. Moreover, since junction means, such as a double-sided tape, become unnecessary, a man day can be reduced while being able to reduce ingredient costs.

[0040] (Example 3) At this example, as shown in drawing 6, in one mold face 50 of metal mold 5, a through tube 10 is countered and the surface is the same as that of

an example 1 except the metal mold heights 52 of the cross-section trapezoid configuration of a round minor diameter being formed from the path of a through tube 10.

[0041] In this example, in case the same laminate as the example 1 which consists of a core material 1 and an absorption-of-sound member 4 is formed and it arranges to one mold face 50 of metal mold 5, a through tube 10 is positioned according to the metal mold heights 52. The positioning accuracy at the time of this arranging a laminate in metal mold 5 improves. And since the metal mold heights 52 press the absorption-of-sound member 4 from the rear-face side of the absorption-of-sound member 4 and are inserted in a through tube 10, a head 40 is supported by the metal mold heights 52, and escaping from a through tube 10 according to the blowing pressure force at the time of foaming is prevented certainly.

[0042] Moreover, since maintenance immobilization of the absorption-of-sound member 4 is compressed and carried out by the core material 1 and metal mold 50, even if a blowing pressure acts, deformation of a core material 1 is prevented. More furthermore than the path of a through tube 10, the cross section of the metal mold heights 52 is made into a trapezoid configuration, and its path of a through tube 10 is larger than the surface, and it is made into the configuration where the lower side is large. Therefore, since the metal mold heights 52 are strongly inserted to a through tube 10 and are firmly fixed [member / 4 / absorption-of-sound] with a core material 1, bending deformation of a core material 1 is prevented more effectively. Therefore, according to the manufacture approach of this example, an instrument panel with still higher dimensional accuracy can be manufactured.

[0043] (Example 4) In this example, the laminating of a core material 1 and tabular absorption-of-sound member 4' is not carried out beforehand, but both are stationed to one mold face 50 of metal mold 5 in piles, and foaming of the foam layer 2 is carried out.

[0044] As shown in drawing 7, metal mold 5 has the metal mold heights 52 same to one mold face 50 as an example 3. And a core material 1 and absorption-of-sound member 4' are arranged on a mold face 50 in piles, and it presses through absorption-of-sound member 4' so that the metal mold heights 52 may insert in the through tube 10 of a core material 1. Then, a part of absorption-of-sound member 4 is pressed by the metal mold heights 52, it is inserted in a through tube 10, and can form the same laminate as an example 1.

[0045] That is, in this example, a core material 1 and absorption-of-sound member 4' can be firmly united with the arrangement and coincidence to the mold face 50 of the core material 1 at the time of foaming, and absorption-of-sound member 4'. Therefore, although workspace is greatly required, since junction means, such as a double-sided tape, become unnecessary, a man day can be reduced while being able to reduce ingredient costs. Moreover, the positioning accuracy at the time of the arrangement to a mold face 50 improves like an example 3, and dimensional accuracy also improves by supporting a cross section by the metal mold heights 52

of a trapezoid configuration.

[0046]

[Effect of the Invention] That is, according to the manufacture approach of the car interior equipment of this invention, a man day can be reduced while being able to reduce ingredient costs, such as a double-sided tape. Moreover, since workspace can be saved and the working hours in a foaming process can be shortened, while productivity improves sharply, the number of metal mold is also reducible.

Furthermore, since positioning accuracy and dimensional accuracy improve, car interior equipment with a high precision can be manufactured easily and certainly.

[0047] And according to the car interior equipment of this invention manufactured by the manufacture approach of this invention, it is lightweight, and is cheap and lightweight-izing and a cost cut of an automobile car body can be attained.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the sectional view of the instrument panel of one example of this invention.

[Drawing 2] It is the important section sectional view of the metal mold in the condition of fabricating the core material.

[Drawing 3] In the manufacture approach of one example of this invention, it is the important section sectional view of the laminate which carried out the laminating of a core material and the absorption-of-sound member in one.

[Drawing 4] In the manufacture approach of one example of this invention, it is the important section sectional view of the metal mold in the condition of fabricating the foam layer.

[Drawing 5] In the manufacture approach of the 2nd example of this invention, it is the explanatory view showing how to carry out the laminating of a core material and the absorption-of-sound member in one.

[Drawing 6] In the manufacture approach of the 3rd example of this invention, it is the important section sectional view of the metal mold in the condition of fabricating the foam layer.

[Drawing 7] In the 4th manufacture approach of this invention, while carrying out the laminating of a core material and the absorption-of-sound member in one, it is the explanatory view showing how to arrange to a mold face.

[Drawing 8] It is the sectional view of the conventional instrument panel.

[Description of Notations]

1: Core material 2: Foam layer 3: Epidermis layer

4: Acoustic-material layer 5: Metal mold 10: Through tube

[Translation done.]

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